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Mono County, California

(U.S.) National Eutrophication Survey, Corvallis, OR

Prepared for

Corvallis Environmental Research Lab, OR

Jun 78

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NATIONAL EUTROPHICATION SURVEY

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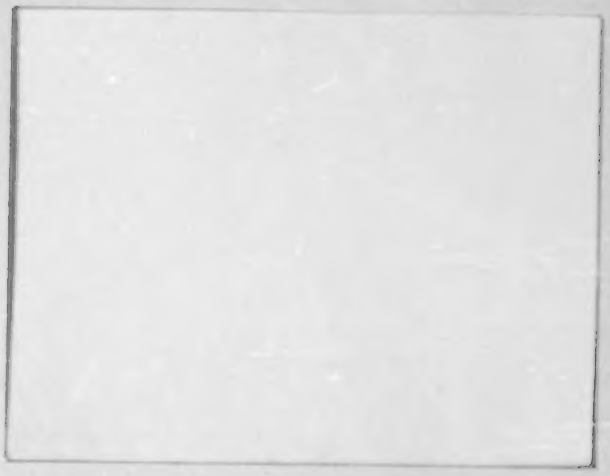

CORVALLIS ENVIRONMENTAL RESEARCH LABORATORY - CORVALLIS, OREGON

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16. ABSTRACT

Annual total phosphorus and total nitrogen loadings to the lake were estimated and subdivided according to either point or non-point source origin. An assessment of the lake's trophic condition and limiting nutrient is also provided. All data collected by the U.S.E.P.A. National Eutrophication Survey during the one year study of the lake and its tributaries are included in the report.

17. KEY WORDS AND DOCUMENT ANALYSIS

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REPORT

ON

LAKE CROWLEY

MONO COUNTY

CALIFORNIA

EPA REGION IX

WORKING PAPER No. 743

WITH THE COOPERATION OF THE

CALIFORNIA STATE WATER RESOURCES CONTROL BOARD

AND THE

CALIFORNIA NATIONAL GUARD

JUNE, 1978

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FOREWORD

The National Eutrophication Survey was initiated in 1972 in response to an Administration commitment to investigate the nationwide threat of accelerated eutrophication to freshwater lakes and reservoirs.

OBJECTIVES

The Survey was designed to develop, in conjunction with state environmental agencies, information on nutrient sources, concentrations, and impact on selected freshwater lakes as a basis for formulating comprehensive and coordinated national, regional, and state management practices relating to point-source discharge reduction and non-point source pollution abatement in lake watersheds.

ANALYTIC APPROACH

The mathematical and statistical procedures selected for the Survey's eutrophication analysis are based on related concepts that:

a. A generalized representation or model relating sources, concentrations, and impacts can be constructed.

b. By applying measurements of relevant parameters associated with lake degradation, the generalized model can be transformed into an operational representation of a lake, its drainage basin, and related nutrients.

c. With such a transformation, an assessment of the potential for eutrophication control can be made.

LAKE ANALYSIS

In this report, the first stage of evaluation of lake and watershed data collected from the study lake and its drainage basin is documented. The report is formatted to provide state environmental agencies with specific information for basin planning [§303(e)], water quality criteria/standards review [§303(c)], clean lakes [§314(a,b)], and water quality monitoring [§106 and §305(b)] activities mandated by the Federal Water Pollution Control Act Amendments of 1972.

Beyond the single lake analysis, broader based correlations between nutrient concentration (and loading) and trophic condition are being made to advance the rationale and data base for refinement of nutrient water quality criteria for the Nation's fresh water lakes. Likewise, multivariate evaluations for the relationships between land use, nutrient export, and trophic condition, by lake class or use, are being developed to assist in the formulation of planning guidelines and policies by EPA and to augment plans implementation by the states.

ACKNOWLEDGEMENT

The staff of the National Eutrophication Survey (Office of Research & Development, U.S. Environmental Protection Agency) expresses sincere appreciation to the California State Water Resources Control Board and the nine Regional Water Quality Control Boards for professional involvement, to the California National Guard for conducting the tributary sampling phase of the Survey, and to those California wastewater treatment plant operators who voluntarily provided effluent samples and flow data.

The staff of the Division of Planning and Research of the State Water Resources Control Board provided invaluable lake documentation and counsel during the Survey, coordinated the reviews of the preliminary reports, and provided critiques most useful in the preparation of this Working Paper series.

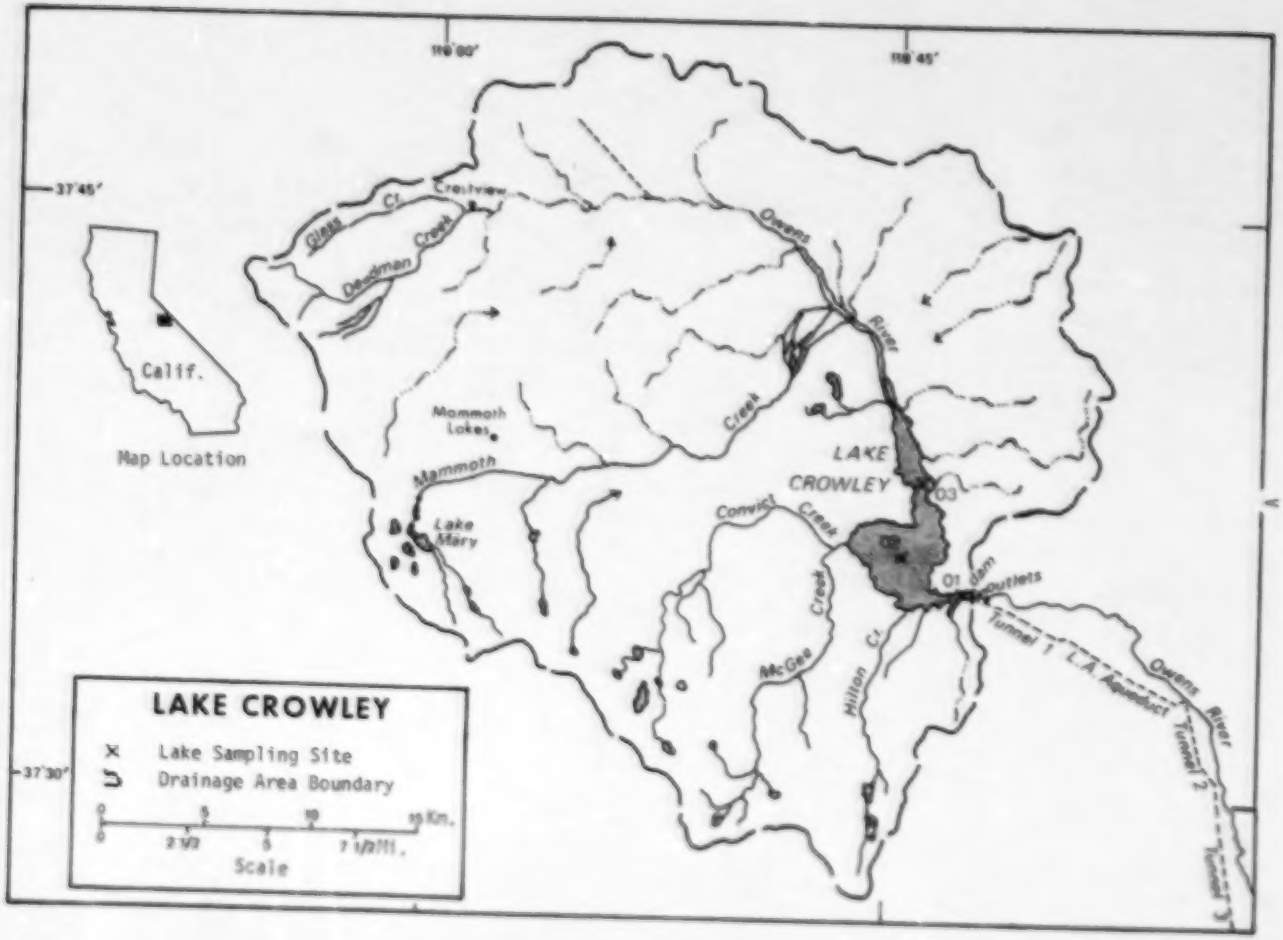
Major General Glen C. Ames, the Adjutant General of California, and Project Officer Second Lieutenant Terry L. Barrie, who directed the volunteer efforts of the California National Guardsmen, are also gratefully acknowledged for their assistance to the Survey.

NATIONAL EUTROPHICATION SURVEY

STUDY RESERVOIRS

State of California

Name	County
Amador	Amador
Boca	Nevada
Britton	Shasta
Casitas	Ventura
Crowley	Mono
Don Pedro	Tuolumne
Elsinore	Riverside
Fallen Leaf	El Dorado
Hennessey	Napa
Henshaw	San Diego
Iron Gate	Siskiyou
Lopez	San Luis Obispo
Mary	Mono
Mendocino	Mendocino
Nicasio	Marin
Lower Otay	San Diego
Pillsbury	Lake
Santa Margarita	San Luis Obispo
Shasta	Shasta
Shaver	Fresno
Silver	Mono
Tahoe	El Dorado, Placer, CA; Carson City, Douglas, Washoe, NV
Tulloch	Calaveras, Tuolumne
Lower Twin	Mono
Upper Twin	Mono


119°00'
118°45'
37°45'
37°30'
Glass Cr.
Crestview
Deadman Creek
Owens River
Calif.
Map Location
Mammoth Lakes
Mammoth Creek
Lake Mary
LAKE CROWLEY
03
02
01
Convict Creek
McGee Creek
Hilton Cr.
dam outlets
Tunnel 1
L.A. Aqueduct
Owens River
Tunnel 2
Tunnel 3
LAKE CROWLEY
Lake Sampling Site
Drainage Area Boundary
0 5 10 15 Km.
0 2 1/2 5 7 1/2 Mi.
Scale

LAKE CROWLEY

STORET NO. 0605

I. INTRODUCTION

Lake Crowley was included in the National Eutrophication Survey as a water body of interest to the California State Water Resources Control Board. Tributaries and nutrient sources were not sampled, and this report relates only to reservoir sampling data.

II. CONCLUSIONS

A. Trophic Condition*:

Survey data indicate that Lake Crowley is eutrophic It ranked fourteenth in overall trophic quality when the 24 California lakes and reservoirs sampled in 1975 were compared using a combination of six parameters**. Sixteen of the water bodies had less median total phosphorus, 18 had less median dissolved orthophosphorus, five had less median inorganic nitrogen, 13 had less mean chlorophyll a, and eight had greater mean Secchi disc transparency. Depression of hypolimnetic dissolved oxygen occurred at sampling station 1 in June (2.8 mg/l at 25.9 meters).

Survey limnologists noted surface concentrations of algae in June and November, and depression of dissolved oxygen and fish kills have been reported to occur in the reservoir (Johns, 1975).

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* Trophic assessment is based on levels of nutrients, dissolved oxygen, and chlorophyll a; phytoplankton kinds and numbers; and transparancy (Allum et al., 1977).

** See Appendix A

B. Rate-Limiting Nutrient:

The algal assay results indicate the reservoir was nitrogen limited in early June. The reservoir data indicate nitrogen limitation at all sampling stations and times.

III. RESERVOIR AND DRAINAGE BASIN CHARACTERISTICS†

A. Morphometry††:

1. Surface area: 21.38 kilometers^2.
2. Mean depth: 10.6 meters.
3. Maximum depth: 38.4 meters.
4. Volume: 226.628 x 10^6 m^3.

B. Precipitation*

1. Year of sampling: 8.1 centimeters.
2. Mean annual: 14.5 centimeters.

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† Table of metric equivalents--Appendix B.
†† Dendy, 1974.
* See Working Paper No. 175, "... Survey Methods, 1973-1976".

IV. LAKE WATER QUALITY SUMMARY

Lake Crowley was sampled three times during the open-water season of 1975 by means of a pontoon-equipped Huey helicopter. The first time, samples for physical and chemical parameters were collected from a number of depths at two stations and thereafter from three stations on the reservoir (see map, page v). During each visit, a single depth-integrated (4.6 m to surface) sample was composited from the stations for phytoplankton identification and enumeration; and during the first visit, a single 18.9-liter depth-integrated sample was composited for algal assays. Also each time, a depth-integrated sample was collected from each of the stations for chlorophyll a analysis. The maximum depths sampled were 25.9 meters at station 1, 14.6 meters at station 2, and 7.9 meters at station 3.

The sampling results are presented in full in Appendix C and are summarized in the following table.

A. SUMMARY OF PHYSICAL AND CHEMICAL CHARACTERISTICS FOR CROWLEY LAKE
STORET CODE 0605

	1ST SAMPLING (6/10/75) 2 SITES			2ND SAMPLING (6/30/75) 3 SITES			3RD SAMPLING (11/ 5/75) 3 SITES		
PARAMETER	RANGE	MEAN	MEDIAN	RANGE	MEAN	MEDIAN	RANGE	MEAN	MEDIAN
TEMP (C)	10.0 - 17.6	14.1	15.3	13.8 - 20.3	17.2	16.9	7.5 - 8.2	7.9	7.9
DISS OXY (MG/L)	5.4 - 7.8	6.9	7.3	2.8 - 8.8	6.9	7.6	8.0 - 9.4	8.6	8.6
CNDCTVY (MCROMO)	169. - 233.	211.	213.	231. - 271.	250.	250.	235. - 248.	241.	241.
PH (STAND UNITS)	7.9 - 8.5	8.3	8.4	7.8 - 8.8	8.4	8.5	8.6 - 8.8	8.7	8.7
TOT ALK (MG/L)	87. - 116.	108.	110.	98. - 121.	110.	111.	64. - 109.	95.	97.
TOT P (MG/L)	0.034 - 0.068	0.047	0.042	0.049 - 0.446	0.104	0.070	0.027 - 0.071	0.037	0.033
ORTHO P (MG/L)	0.032 - 0.072	0.046	0.042	0.026 - 0.122	0.046	0.039	0.011 - 0.018	0.013	0.013
NO2+NO3 (MG/L)	0.020 - 0.030	0.021	0.020	0.020 - 0.030	0.021	0.020	0.020 - 0.020	0.020	0.020
AMMONIA (MG/L)	0.020 - 0.050	0.026	0.020	0.030 - 0.120	0.041	0.035	0.020 - 0.020	0.020	0.020
KJEL N (MG/L)	0.200 - 0.200	0.200	0.200	0.400 - 0.800	0.507	0.500	0.200 - 0.400	0.246	0.200
INORG N (MG/L)	0.040 - 0.070	0.047	0.040	0.050 - 0.150	0.062	0.055	0.040 - 0.040	0.040	0.040
TOTAL N (MG/L)	0.220 - 0.230	0.221	0.220	0.420 - 0.820	0.529	0.520	0.220 - 0.420	0.266	0.220
CHLRPYL A (UG/L)	1.0 - 1.7	1.3	1.3	4.8 - 6.8	5.5	5.0	8.8 - 9.3	9.0	9.0
SECCHI (METERS)	5.5 - 5.5	5.5	5.5	1.5 - 3.0	2.4	2.7	******	**********	

B. Biological characteristics:

1. Phytoplankton -

Sampling Date	Dominant Genera	Algal Units per ml
06/10/75	1. Chroomonas (?) sp.	1,049
	2. Asterionella sp.	504
	3. Dinobryon sp.	378
	4. Fragilaria sp.	252
	5. Cryptomonas sp.	84
	Total	2,267
06/30/75	1. Chroomonas (?) sp.	892
	2. Anabaena sp.	803
	3. Asterionella sp.	758
	4. Schroederia sp.	580
	5. Cryptomonas sp.	312
	Other genera	668
	Total	4,013
11/05/75	1. Aphanizomenon sp.	421
	2. Fragilaria sp.	225
	3. Chroomonas (?) sp.	168
	4. Oscillatoria sp.	140
	5. Stephanodiscus sp.	112
	Other genera	29
	Total	1,095

2. Chlorophyll a -

Sampling Date	Station Number	Chlorophyll a (µg/l)
06/10/75	1	1.7
	2	1.0
	3	-
06/30/75	1	6.8
	2	5.0
	3	4.8
11/05/75	1	9.0
	2	8.8
	3	9.3

C. Limiting Nutrient Study:

1. Autoclaved, filtered, and nutrient spiked -

Spike (mg/l)	Ortho P Conc. (mg/l)	Inorganic N Conc. (mg/l)	Maximum yield (mg/l-dry wt.)
Control	0.040	0.050	2.7
0.050 P	0.090	0.050	2.5
0.050 P + 1.0 N	0.090	1.050	24.8
1.0 N	0.040	1.050	13.0

2. Discussion -

The control yield of the assay alga, Selenastrum capricornutum, indicates that the potential primary productivity of Lake Crowley was high at the time the sample was collected (06/10/75). Also, a significant increase in yield with the addition of nitrogen alone indicates that the reservoir was limited by nitrogen at that time. Note that the addition of phosphorus alone did not result in an increased yield.

The reservoir data also indicate nitrogen limitation; i.e., the mean inorganic nitrogen/orthophosphorus ratios were 3/1 or less each sampling time.

V. LITERATURE REVIEWED

Allum, M.O., R.E. Glessner, and J. H. Gakstatter, 1977. An evaluation of the National Eutrophication Survey data. Working Paper No. 900, Corvallis Env. Res. Lab., Corvallis, OR.

Dendy, William B., 1974. Personal communication (waterbody information and morphometry). CA Water Res. Contr. Bd., Sacramento.

Johns, Gerald E., 1975. Personal communication (Lake Crowley water quality summary). CA Water Res. Contr. Bd., Sacramento.

Vollenweider, R. A., and P. J. Dillon, 1974. The application of the phosphorus loading concept to eutrophication research. Natl. Res. Council of Canada Publ. No. 13690, Canada Centre for Inland Waters, Burlington, Ontario.

VI. APPENDICES

APPENDIX A

LAKE RANKINGS

LAKE DATA TO BE USED IN RANKINGS

LAKE CODE	LAKE NAME	MEDIAN TOTAL P	MEDIAN INORG N	500-MEAN SEC	MEAN CHLOPA	15-MIN DO	MEDIAN DISS ORTHO P
0601	AMADOR RESERVOIR	0.040	0.390	406.667	22.383	14.600	0.020
0602	BOCA LAKE	0.012	0.040	372.833	1.700	6.890	0.003
0603	LAKE BRITTON	0.067	0.115	446.500	4.811	11.200	0.047
0604	CASITAS RESERVOIR	0.029	0.050	400.250	3.192	14.000	0.014
0605	CROWLEY LAKE	0.044	0.045	374.750	5.800	12.200	0.034
0606	DON PEDRO RESERVOIR	0.013	0.060	381.733	3.544	11.400	0.004
0607	LAKE ELSINORE	0.469	0.120	489.214	70.572	8.000	0.092
0608	FALLEN LEAF RESERVOIR	0.007	0.040	24.357	0.786	8.800	0.005
0609	LAKE HENNESSEY	0.027	0.060	416.000	4.525	15.000	0.012
0610	LAKE HENSHAW	0.138	0.070	461.000	26.783	9.800	0.073
0611	IRON GATE RESERVOIR	0.184	0.690	446.333	6.217	13.800	0.124
0614	LOPEZ LAKE	0.371	0.890	372.000	8.656	15.000	0.343
0615	LAKE MARY	0.018	0.040	296.000	2.550	10.600	0.002
0616	LAKE MENDOCINO	0.020	0.050	436.500	3.100	9.400	0.008
0617	NICASIO RESERVOIR	0.055	0.345	482.778	6.633	9.800	0.013
0618	LOWER OTAY RESERVOIR	0.058	0.180	447.250	15.933	15.000	0.013
0619	LAKE PILLSBURY	0.022	0.060	466.667	6.389	8.200	0.008
0620	SANTA MARGARITA LAKE	0.037	0.070	400.000	9.122	14.800	0.014
0621	SHASTA LAKE	0.021	0.060	381.542	4.087	9.000	0.015
0622	SHAVER	0.014	0.060	346.400	1.700	7.400	0.004
0623	SILVER LAKE	0.012	0.055	356.000	1.800	7.000	0.003
0624	TULLOCK RESERVOIR	0.025	0.060	433.000	13.878	7.400	0.009
0625	UPPER TWIN LAKES	0.015	0.040	300.200	3.340	7.400	0.004
0626	LOWER TWIN LAKES	0.014	0.040	248.000	2.900	11.400	0.003

PERCENT OF LAKES WITH HIGHER VALUES (NUMBER OF LAKES WITH HIGHER VALUES)

LAKE CODE	LAKE NAME	MEDIAN TOTAL P	MEDIAN INORG N	500-MEAN SEC	MEAN CHLORA	15- MIN DO	MEDIAN DISS ORTHO P	INDEX NU
0601	AMADOR RESERVOIR	35 (8)	4 (1)	43 (10)	9 (2)	17 (4)	26 (6)	134
0602	BOCA LAKE	89 (20)	98 (22)	78 (16)	91 (21)	100 (23)	91 (20)	539
0603	LAKE BRITTON	17 (4)	22 (5)	17 (4)	48 (11)	43 (10)	17 (4)	164
0604	CASITAS RESERVOIR	43 (10)	74 (17)	48 (11)	7C (16)	22 (5)	37 (8)	294
0605	CROWLEY LAKE	30 (7)	78 (18)	65 (15)	43 (10)	30 (7)	22 (5)	268
0606	DON PEDRO RESERVOIR	83 (19)	54 (11)	57 (13)	61 (14)	37 (8)	78 (17)	370
0607	LAKE ELSINORE	0 (0)	17 (4)	0 (0)	0 (0)	78 (18)	9 (2)	104
0608	FALLEN LEAF RESERVOIR	100 (23)	87 (19)	100 (23)	100 (23)	70 (16)	70 (16)	527
0609	LAKE HENNESSEY	48 (11)	54 (11)	39 (9)	52 (12)	4 (0)	52 (12)	249
0610	LAKE HENSHAW	13 (3)	33 (7)	13 (3)	4 (1)	54 (12)	13 (3)	130
0611	IRON GATE RESERVOIR	9 (2)	0 (0)	26 (6)	39 (9)	26 (6)	4 (1)	104
0614	LOPEZ LAKE	4 (1)	26 (6)	74 (17)	26 (6)	4 (0)	0 (0)	134
0615	LAKE MARY	96 (22)	87 (19)	91 (21)	83 (19)	48 (11)	100 (23)	505
0616	LAKE MENDOCINO	65 (15)	70 (16)	30 (7)	74 (17)	61 (14)	63 (14)	363
0617	NICASIO RESERVOIR	26 (6)	9 (2)	4 (1)	30 (7)	54 (12)	46 (10)	169
0618	LOWER OTAY RESERVOIR	22 (5)	13 (3)	22 (5)	13 (3)	4 (0)	46 (10)	120
0619	LAKE PILLSBURY	57 (13)	41 (9)	9 (2)	35 (8)	74 (17)	63 (14)	279
0620	SANTA MARGARITA LAKE	39 (9)	33 (7)	52 (12)	22 (5)	13 (3)	37 (8)	196
0621	SHASTA LAKE	61 (14)	54 (11)	61 (14)	57 (13)	65 (15)	30 (7)	328
0622	SHAVER	78 (18)	41 (9)	83 (19)	96 (22)	87 (19)	78 (17)	463
0623	SILVER LAKE	89 (20)	65 (15)	78 (18)	87 (20)	96 (22)	91 (20)	506
0624	TULLOCK RESERVOIR	52 (12)	54 (11)	35 (8)	17 (4)	87 (19)	57 (13)	302
0625	UPPER TWIN LAKES	70 (16)	98 (22)	87 (20)	65 (15)	87 (19)	78 (17)	485
0626	LOWER TWIN LAKES	74 (17)	87 (19)	96 (22)	78 (18)	37 (8)	91 (20)	463

LAKES RANKED BY INDEX NOS.

RANK	LAKE CODE	LAKE NAME	INDEX NO
1	0602	BOCA LAKE	539
2	0606	FALLEN LEAF RESERVOIR	527
3	0623	SILVER LAKE	506
4	0615	LAKE MARY	505
5	0625	UPPER TWIN LAKES	485
6	0626	LOWER TWIN LAKES	463
7	0622	SHAVER	463
8	0606	DON PEDRO RESERVOIR	370
9	0616	LAKE MENDOCINO	363
10	0621	SHASTA LAKE	328
11	0624	TULLOCK RESERVOIR	302
12	0604	CASITAS RESERVOIR	294
13	0619	LAKE PILLSBURY	279
14	0605	CROWLEY LAKE	268
15	0609	LAKE HENNESSEY	249
16	0620	SANTA MARGARITA LAKE	196
17	0617	NICASIO RESERVOIR	169
18	0603	LAKE BRITTON	164
19	0614	LOPEZ LAKE	134
20	0601	AMADOR RESERVOIR	134
21	0610	LAKE HENSHAW	130
22	0618	LOWER OTAY RESERVOIR	120
23	0607	LAKE ELSINORE	104
24	0611	IRON GATE RESERVOIR	104

APPENDIX B

CONVERSION FACTORS

CONVERSION FACTORS

Hectares x 2.471 = acres

Kilometers x 0.6214 = miles

Meters x 3.281 = feet

Cubic meters x 8.107×10^{-4} = acre/feet

Square kilometers x 0.3861 = square miles

Cubic meters/sec x 35.315 - cubic feet/sec

Centimeters x 0.3937 = inches

Kilograms x 2.205 = pounds

Kilograms/square kilometer x 5.711 = lbs/square mile

APPENDIX C

PHYSICAL and CHEMICAL DATA

STORET RETRIEVAL DATE 76/09/24

060501
37 35 16.0 118 42 33.0 3
CHOWLET LAKE
06051 CALIFORNIA

11EPALES 751126 2111202
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP CENT	00300 DO MG/L	00077 TRANSP SECCHI INCHES	00094 CNDUCTVY FIELD MICROMHO	00400 PH SU	00410 T ALK CACO3 MG/L	00610 NH3-N TOTAL MG/L	00625 TOT KJEL N MG/L	00630 NO2&NO3 N-TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P
75/06/10	13 50	0000	17.6	7.8	216	222	8.50	104	0.020	0.200	0.030	0.035
	13 50	0005	16.9	7.8		225	8.20	104	0.020	0.200	0.020K	0.038
	13 50	0015	16.2	7.8		211	8.50	105	0.030	0.200	0.020K	0.035
	13 50	0031	11.2	6.6		169	8.20	87	0.030	0.200	0.020K	0.042
	13 50	0055	10.3	5.4		202	8.50	111	0.040	0.200	0.020	0.066A
	13 50	0076	10.0	5.4		205	7.90	115	0.050	0.200	0.020	0.072
75/06/30	15 45	0000	20.3	8.8	66	271	8.60	110	0.040	0.500	0.020K	0.027
	15 45	0005	20.2	8.8		268	8.75	112	0.040	0.600	0.020K	0.028
	15 45	0020	16.6	7.0		249	8.50	111	0.030	0.500	0.020K	0.037
	15 45	0050	15.5	5.4		231	8.30	109	0.040	0.400	0.020K	0.045
	15 45	0085	13.6	2.8		251	7.85	121	0.120	0.600	0.030	0.122
75/11/05	11 30	0000	8.1	9.0		240	8.70	91	0.020K	0.200	0.020A	0.014
	11 30	0005	7.9	8.6		242	8.70	97	0.020A	0.200K	0.020K	0.011
	11 30	0016	7.9	8.2		237	8.70	100	0.020K	0.300	0.020K	0.018
	11 30	0045	7.9	8.6		245	8.70	97	0.020K	0.200	0.020K	0.015
	11 30	0082	7.5	8.2		241	8.70	95	0.020K	0.200	0.020K	0.013

DATE FROM TO	TIME OF DAY	DEPTH FEET	00665 PHOS-TOT MG/L P	32217 CHLRPHYL A UG/L	00031 INCDT LT REMNING PERCENT
75/06/10	13 50	0000	0.034	1.7	
	13 50	0005	0.038		
	13 50	0015	0.057		
	13 50	0031	0.039		
	13 50	0055	0.058		
	13 50	0076	0.064		
75/06/30	15 45	0000	0.046	6.8	
	15 45	0005	0.066		
	15 45	0020	0.069		
	15 45	0050	0.070		
	15 45	0085	0.148		
75/11/05	11 30	0000	0.030	9.0	
	11 30	0005	0.027		
	11 30	0016	0.032		
	11 30	0045	0.037		
	11 30	0082	0.071		

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 76/09/24

0060502
37 36 14.0 118 44 48.0 3
CHOWLET LAKE
06051 CALIFORNIA

11EPALES 751120 2111252
0047 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP CENT	00300 DO MG/L	00077 TRANSP SECCHI INCHES	00094 CNDUCTVY FIELD MICROMHO	00400 PH SU	00410 T ALK CACO3 MG/L	00610 NH3-N TOTAL MG/L	00625 TOT KJEL N MG/L	00630 NO2&NO3 N-TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P
75/06/10	14 15	0000	17.4			233	8.50	110	0.020	0.200	0.020K	0.032
	14 15	0005	15.6	7.6		222	8.40	110	0.020	0.200	0.020K	0.042
	14 15	0015	15.3	7.6		222	8.40	110	0.020	0.200	0.020K	0.040
	14 15	0028	13.4	7.0		213	8.30	112	0.020	0.200	0.020K	0.051A
	14 15	0043	10.8	6.2		201	8.40	116	0.020	0.200	0.020K	0.055
75/06/30	15 10	0000	19.2	7.8	120	260	8.50	111	0.030	0.600	0.020K	0.031
	15 10	0005	17.4	8.0		253	8.60	112	0.030	0.600	0.020K	0.032
	15 10	0015	17.0	7.8		252	8.50	111	0.030	0.500	0.020K	0.034
	15 10	0030	16.5	6.6		244	8.40	115	0.030	0.400	0.020K	0.046
	15 10	0046	15.5	5.2		244	8.10	113	0.040	0.400	0.030	0.064
75/11/05	11 00	0000	8.2	8.4		236	8.00	84	0.020K	0.200	0.020K	0.012
	11 00	0005	8.1	8.4		235	8.00	87	0.020K	0.200	0.020K	0.014
	11 00	0015	8.0	8.4		238	8.00	88	0.020K	0.200	0.020K	0.012
	11 00	0048	7.9	8.0		237	8.70	90	0.020K	0.300	0.020K	0.013

DATE FROM TO	TIME OF DAY	DEPTH FEET	00665 PHOS-TOT MG/L P	32217 CHLRPHYL A UG/L	00031 INCDT LT NEMNING PERCENT
75/06/10	14 15	0000	0.043	1.0	
	14 15	0005	0.038		
	14 15	0015	0.038		
	14 15	0028	0.042		
	14 15	0043	0.056		
75/06/30	15 10	0000	0.055	5.0	
	15 10	0005	0.060		
	15 10	0015	0.060		
	15 10	0030	0.065		
	15 10	0046	0.091		
75/11/05	11 00	0000	0.030	8.8	
	11 00	0005	0.030		
	11 00	0015	0.033		
	11 00	0048	0.042		

STORET RETRIEVAL DATE 76/09/24

060503
37 38 03.0 118 44 08.0 3
CROWLEY LAKE
06051 CALIFORNIA

11EPALES 751204 2111202
0030 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP CENT	00300 DO MG/L	00077 TRANSP SECCHI INCHES	00094 CNDUCTVY FIELD MICROMHO	00400 PH SU	00410 T ALK CACO3 MG/L	00610 NH3-N TOTAL MG/L	00625 TOT KJEL N MG/L	00630 NO2&NO3 N-TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P
75/06/30	14 40	0000	19.1	7.6	105	257	8.55	98	0.030	0.800	0.020K	0.040
	14 40	0005	17.4	7.6		242	8.60	107	0.040	0.400	0.020K	0.039
	14 40	0015	16.4	7.6		237	8.50	108	0.030	0.400	0.020K	0.046
	14 40	0026	15.9	6.4		237	8.30	108	0.040	0.400	0.020K	0.049
75/11/05	11 50	0000	8.0	9.4		242	8.80	102	0.020K	0.300	0.020K	0.012
	11 50	0005	7.8	9.4		244	8.80	104	0.020K	0.200	0.020K	0.014
	11 50	0015	7.8	8.8		248	8.80	107	0.020K	0.300	0.020K	0.014
	11 50	0021	7.7	8.8		243	8.80	109	0.020K	0.400	0.020K	0.013

DATE FROM TO	TIME OF DAY	DEPTH FEET	00665 PHOS-TOT MG/L P	32217 CHLRPHYL A UG/L	00031 INCDT LT REMNING PERCENT
75/06/30	14 40	0000	0.049	4.8	
	14 40	0005	0.067		
	14 40	0015	0.071		
	14 40	0026	0.076		
75/11/05	11 50	0000	0.043	9.3	
	11 50	0005	0.037		
	11 50	0015	0.033		
	11 50	0021	0.034		

K VALUE KNOWN TO BE
LESS THAN INDICATED